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## NOTICE OF ALLOWANCE AND FEE(S) DUE

33942 7590 10/09/2008

CHA & REITER, LLC  
210 ROUTE 4 EAST STE I03  
PARAMUS, NJ 07652

EXAMINER	
HAILE, FEBEN	
ART UNIT	PAPER NUMBER
2616	

DATE MAILED: 10/09/2008

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,330	10/21/2003	Jin-Hee Kim	5000-1-440	2174

TITLE OF INVENTION: METHOD FOR IMPLEMENTING LOGICAL MAC IN ETHERNET PASSIVE OPTICAL NETWORK SYSTEM

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	01/09/2009

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

## HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER:** Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

**PART B - FEE(S) TRANSMITTAL**

Complete and send this form, together with applicable fee(s), to: **Mail Stop ISSUE FEE**  
**Commissioner for Patents**  
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**INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

33942 7590 10/09/2008

**CHA & REITER, LLC**  
**210 ROUTE 4 EAST STE 103**  
**PARAMUS, NJ 07652**

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

**Certificate of Mailing or Transmission**

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or by facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)

(Signature)

(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,330	10/21/2003	Jin-Hee Kim	5000-I-440	2174

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nonprovisional	NO	\$1510	\$300	\$0	\$1810	01/09/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
HAILE, FEBEN	2616	370-445000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

"Fee Address" indication (or "Fee Address" indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 \_\_\_\_\_  
 2 \_\_\_\_\_  
 3 \_\_\_\_\_

## 3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY AND STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent):  Individual  Corporation or other private group entity  Government

## 4a. The following fee(s) are submitted:

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- Issue Fee
- Publication Fee (No small entity discount permitted)
- Advance Order - # of Copies \_\_\_\_\_

- A check is enclosed.
- Payment by credit card. Form PTO-2038 is attached.
- The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

## 5. Change in Entity Status (from status indicated above)

a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature \_\_\_\_\_

Date \_\_\_\_\_

Typed or printed name \_\_\_\_\_

Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS; SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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10/690,330	10/21/2003	Jin-Hee Kim	5000-1-440	2174
33942	7590	10/09/2008		EXAMINER
CHA & REITER, LLC 210 ROUTE 4 EAST STE 103 PARAMUS, NJ 07652				HAILE, FEBEN
				ART UNIT
				PAPER NUMBER 2616
DATE MAILED: 10/09/2008				

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 1185 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 1185 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

<b>Notice of Allowability</b>	<b>Application No.</b> 10/690,330	<b>Applicant(s)</b> KIM ET AL.
	<b>Examiner</b> FEBEN HAILE	<b>Art Unit</b> 2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTO-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1.  This communication is responsive to amendment filed June 20, 2008.

2.  The allowed claim(s) is/are 3-16 (renumbered as 1-14).

3.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)  All    b)  Some\*    c)  None    of the:

1.  Certified copies of the priority documents have been received.

2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_.

3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4.  A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5.  CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.

(a)  including changes required by the Notice of Draftperson's Patent Drawing Review ( PTO-948) attached  
1)  hereto or 2)  to Paper No./Mail Date \_\_\_\_.

(b)  including changes required by the attached Examiner's Amendment / Comment or in the Office action of  
Paper No./Mail Date \_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1.  Notice of References Cited (PTO-892)

5.  Notice of Informal Patent Application

2.  Notice of Draftperson's Patent Drawing Review (PTO-948)

6.  Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_.

3.  Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_.

7.  Examiner's Amendment/Comment

4.  Examiner's Comment Regarding Requirement for Deposit  
of Biological Material

8.  Examiner's Statement of Reasons for Allowance

9.  Other \_\_\_\_.

/Aung S. Moe/  
Supervisory Patent Examiner, Art Unit 2616

**EXAMINER'S AMENDMENT**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Steve Cha (reg. no. 44,069) on September 25, 2008.

2. The application has been amended as follows:

Claim 4 (currently amended): The method as set forth in claim 3, wherein, the new Ethernet frame comprises:

a DA (Destination Address) field for indicating a destination address;  
~~an a~~ SA (Source Address) field for indicating a source address;  
~~an a~~ LLID field for indicating a logical link identifier;  
~~an a~~ L/T (Length/Type) field for indicating a type and length of the Ethernet frame;  
a data/PAD (Packet Assembly and Disassembly) field for indicating data of the Ethernet frame; and  
~~an a~~ FCS (Frame Check Sequence) field which is positioned at an end of the frame and used for detecting an error of the frame when information divided on a frame-by-frame basis is transmitted in data communication,

wherein the frame in which the LLID field is positioned is transferred to the data link layer so that the data link layer enables logical MAC emulation.

Regarding claim 6 (currently amended): The method as set forth in claim 5, wherein the step (b) comprises the steps of:

- (b-1) causing the RS to receive an Ethernet packet from the physical layer;
- (b-2) causing the RS to determine whether an error exists within the preamble of the Ethernet packet received at the step (b-1);
- (b-3) if an error exists within the preamble as a result of the determination at the step (b-2), discarding the Ethernet packet and reporting the error of the preamble;
- (b-4) if no error exists w/in the preamble as the result of the determination at the step (b-2), determining whether an error exists within the Ethernet frame of the Ethernet packet;
- (b-5) if an error exists within the Ethernet frame as a result of the determination at the step (b-4), reporting the error of the Ethernet frame;
- ~~(b-6) if no error exists within the Ethernet frame as the result of the determination at the step (b-4), extracting the LLID information contained in the preamble and configuring the new Ethernet frame by inserting the LLID information at a predetermined position of the Ethernet frame outside the preamble; and~~
- (b-7) processing ~~an~~ the FCS of the new Ethernet frame and transferring a new Ethernet packet.

Regarding claim 7 (currently amended): The method as set forth in claim 4, wherein the step (b) comprises the steps of:

- (b-1) causing the RS to receive an Ethernet packet from the physical layer;
- (b-2) causing the RS to determine whether an error exists within the preamble of the Ethernet packet received at the step (b-1);
- (b-3) if an error exists within the preamble as a result of the determination at the step (b-2), discarding the Ethernet packet and reporting the error of the preamble;
- (b-4) if no error exists w/thin the preamble as the result of the determination at the step (b-2), determining whether an error exists within the Ethernet frame of the Ethernet packet;
- (b-5) if an error exists within the Ethernet frame as a result of the determination at the step (b-4), reporting the error of the Ethernet frame;
- ~~(b-6) if no error exists within the Ethernet frame as the result of the determination at the step (b-4), extracting the LLID information contained in the preamble and configuring the new Ethernet frame by inserting the LLID information at a predetermined position of the Ethernet frame outside the preamble; and~~
- ~~(b-7)~~ processing an the FCS of the new Ethernet frame and transferring a new Ethernet packet.

Regarding claim 12 (currently amended): A method for implementing MAC (Media Access control) in an Ethernet passive optical network system, comprising the steps of:

- (a) causing a data link layer of the Ethernet passive optical network system to transfer an Ethernet frame containing LLID (Logical Link I-D) information;
- (b) causing an RS (Reconciliation Sublayer) to extract the LLID information contained in the Ethernet frame and configure a standard-based Ethernet frame by inserting the LLID information in a preamble, and causing the RS to transfer the standard-based Ethernet frame to a lower physical layer of the Ethernet passive optical network system; and
- (c) causing the physical layer to transfer the preamble containing the LLID information;

wherein step (b) comprises the steps of:

extracting the LLID information from the received Ethernet frame and  
inserting the LLID information within the preamble; and  
updating a FCS and CRC within the Ethernet frame.  
producing the FCS associated with the standard-based Ethernet frame  
from which CRC information and the LLID information are removed, and  
updating the CRC and LLID information within the standard-based  
Ethernet frame.

Claim 13 (currently amended): The method as set forth in claim 12, wherein, the Ethernet frame containing LLID information comprises:

a DA (Destination Address) field for indicating a destination address;  
an a SA (Source Address) field for indicating a source address;

~~an a~~ a LLID field for indicating a logical link identifier;  
~~an a~~ a L/T (Length/Type) field for indicating the Ethernet frame's length and type;  
a data/PAD (Packet Assembly and Disassembly) field for indicating data of the Ethernet frame; and  
~~an a~~ a FCS (Frame Check Sequence) field which is positioned at an end of the frame and used for detecting an error of the frame when information divided on a frame-by-frame basis is transmitted in data communication,  
wherein said frame containing LLID information is transferred to the data link layer so that the data ]ink layer uses the LLID field to enable logical MAC emulation.

Claim 15 (currently amended): The method as set forth in claim 14, wherein the step (b) comprises the steps of:

- (b-1) causing the KS to receive the Ethernet frame from the physical layer;
- (b-2) causing the RS to extract the LLID information from the received Ethernet frame and insert the extracted LLID information within the preamble;
- ~~(b-3) producing an FCS associated with the standard-based Ethernet frame from which CRC information and the LLID information are removed, and updating the CRC and LLID information within the standard-based Ethernet frame; and~~
- (b-4) transferring the Ethernet packet with the standard-based Ethernet frame containing the updated CRC and FCS information to the physical layer.

Claim 16 (currently amended): The method as set forth in claim 13, wherein the step (b) comprises the steps of:

- (b-1) causing the KS to receive the Ethernet frame from the physical layer;
- (b-2) causing the RS to extract the LLID information from the received Ethernet frame and insert the extracted LLID information within the preamble;
- (b-3) ~~producing an FCS associated with the standard-based Ethernet frame from which CRC information and the LLID information are removed, and updating the CRC and LLID information within the standard-based Ethernet frame; and~~
- (b-4) transferring the Ethernet packet with the standard-based Ethernet frame containing the updated CRC and FCS information to the physical layer.

3. The following is an examiner's statement of reasons for allowance:

The prior art of record fails to explicitly disclose, teach, and/or fairly suggest LLID information being available to higher layers such that a single MAC layer can be emulated. Specifically the limitation, (1) determining whether an error exists within a preamble and Ethernet Frame; and if no error exists within the Ethernet, extracting the LLID information contained in the preamble and configuring a new Ethernet frame by inserting the LLID information at a predetermined position of the Ethernet frame outside the preamble, and (2) producing an FCS associated with the standard-based Ethernet frame from which CRC information and the LLID information are removed, and updating the CRC and LLID information within the standard-based Ethernet frame as

substantially described in the independent claims of the instant application. Therefore, the claimed invention is patentable over the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Kim et al. (US 7,274,695), Method and Apparatus for Processing Ethernet Data Frame in Media Access Control (MAC) Sublayer of Ethernet Passive Optical Network (PON)

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to FEBEN HAILE whose telephone number is (571)272-3072. The examiner can normally be reached on 10:00 am-6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Aung Moe can be reached on (571)272-7314. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Aung S. Moe/  
Supervisory Patent Examiner, Art Unit 2616

FEBEN HAILE  
Examiner  
Art Unit 2616